Jacob R. Davis

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Research Interests

My research combines novel observing platforms with modern data analysis methods such as machine learning to study the ocean and atmosphere. I apply these methods to investigate air-sea interactions in challenging environments, including during hurricanes and in the coastal Arctic.

Education

Ph.D. **Civil and Environmental Engineering**, University of Washington — Jun 2025
Data Science Option; Dissertation: *Measuring waves in difficult places: New approaches to observing waves in hurricanes and sea ice* (with Jim Thomson)

M.S. **Mechanical Engineering**, University of Massachusetts Amherst — Sep 2021
Thesis: *Design and testing of a foundation raised oscillating surge wave energy converter* (with Krish Thiagarajan Sharman)

B.S. **Mechanical Engineering**, University of Massachusetts Amherst — May 2019

Professional Experience

Postdoctoral Scholar, Physical Oceanography, Woods Hole Oceanographic Institution — 2025 - present

Ongoing work includes: 1) collection and synthesis of ocean wave and profiling float measurements in hurricanes for the Study on Air-Sea Coupling with WAves, Turbulence, and Clouds at High winds project (SASCWATCH) project [website]; and 2) development of methods for coastal oceanographic measurements using submarine Distributed Acoustic Sensing.

Graduate Research Assistant, University of Washington Applied Physics Laboratory — 2021 - 2025

Dissertation projects: 1) air-deployed wave buoys for hurricane air-sea interaction studies as part of the NOPP Hurricane Coastal Impacts project (awarded 2025 NOPP Excellence in Partnering Award) [website] [award]; 2) data-driven methods for ocean wave measurements using submarine Distributed Acoustic Sensing [website]; and 3) design and testing of microSWIFT wave buoys [article].

Graduate Research Assistant, University of Massachusetts Amherst — 2019 - 2021

Masters thesis projects: 1) development of the Ocean Resources and Renewable Energy wave-current flume; and 2) oscillating surge wave energy converter wave tank experiments.

Grants and Funding

3. **Jacob Davis**. *Woods Hole Oceanographic Institution Postdoctoral Scholarship*. Woods Hole Oceanographic Institution Physical Oceanography department. (2025–2027)

2. **Jacob Davis**. *Ocean Engineering and Instrumentation Fellowship*. Link Foundation. (2024–2025)

1. **Jacob Davis**. *National Science Foundation Graduate Research Fellowship (NSF GRFP)*. National Science Foundation. (2021–2024)

Referreed Publications

11. Jim Thomson, **Jacob Davis**, Isabel Houghton, Benjamin W. Barr, Christie Hegermiller, Miguel Mejia, Jonathan Moskaitis, Elizabeth J. Thompson (2026). Rapid changes in ocean surface waves across the eye of Hurricane Milton (2024). *Geophysical Research Letters*, 53, e2026GL122486. https://doi.org/10.1029/2026GL122486

10. Angelos Papandreou, Isaac Ginis, Tetsu Hara, **Jacob Davis**, Isabel Houghton, Jim Thomson, Martha Schonau and Luca Centurioni (2026). Evidence of surface wave reduction by hurricane-generated ocean currents. *Journal of Physical Oceanography*, e250282. https://doi.org/10.1175/JPO-D-25-0282.1

9. **Jacob Davis**, Jim Thomson, Madison M. Smith, A. Christian Stanciu (2026). Neural network-based methods for ocean surface wave measurement using submarine distributed acoustic sensing (DAS). *Journal of Geophysical Research: Machine Learning and Computation*, 3, e2025JH001090. https://doi.org/10.1029/2025JH001090

8. **Jacob Davis**, Jim Thomson, Isabel A. Houghton, Chris W. Fairall, Brian J. Butterworth, Elizabeth J. Thompson, Gijs de Boer, James D. Doyle, Jonathan R. Moskaitis (2025). Ocean surface wave slopes and wind-wave alignment observed in Hurricane Idalia. *Journal of Geophysical Research: Oceans*, 130, e2024JC021814. https://doi.org/10.1029/2024JC021814

7. Jim Thomson, Phil Bush, Viviana Castillo Contreras, Nate Clemett, **Jacob Davis**, Alex de Klerk, Emily Iseley, Edwin Rainville, Brenton Salmi, Joe Talbert (2023). Development and testing of microSWIFT expendable wave buoys. *Coastal Engineering Journal*, 66(1), 168–180. https://doi.org/10.1080/21664250.2023.2283325

6. Madison M. Smith, Jim Thomson, Michael G. Baker, Robert E. Abbott, **Jake Davis** (2023). Observations of ocean surface wave attenuation in sea ice using seafloor cables. *Geophysical Research Letters*, 50, e2023GL105243. https://doi.org/10.1029/2023GL105243

5. **Jacob Davis**, Jim Thomson, Isabel A. Houghton, James D. Doyle, William A. Komaromi, Chris W. Fairall, Elizabeth J. Thompson, Jonathan R. Moskaitis (2023). Saturation of ocean surface wave slopes observed during hurricanes. *Geophysical Research Letters*, 50, e2023GL104139. https://doi.org/10.1029/2023GL104139

4. Jessica M. Maita, Sarshad Rommel, **Jacob R. Davis**, Heonjune Ryou, James A. Wollmershauser, Edward P. Gorzkowski, Boris N. Feigelson, Mark Aindow, Seok-Woo Lee (2023). Grain size effect on the mechanical properties of nanocrystalline magnesium aluminate spinel. *Acta Materialia*. https://doi.org/10.1016/j.actamat.2023.118881

3. Salman Husain, **Jacob Davis**, Nathan Tom, Krish Thiagarajan, Cole Burge, Nhu Nguyen (2023). Influence on structural loading of a wave energy converter by controlling variable-geometry components and the power take-off. *Journal of Offshore Mechanics and Arctic Engineering*. https://doi.org/10.1115/1.4062115

2. Michael Choiniere, **Jacob Davis**, Nhu Nguyen, Nathan Tom, Matthew Fowler, Krish Sharman (2021). Hydrodynamics and load shedding behavior of a variable geometry Oscillating Surge Wave Energy Converter (OSWEC). *Renewable Energy*. https://doi.org/10.1016/j.renene.2022.05.169

1. Tyler John Flanagan, Sriram Vijayan, Sergey Galitskiy, **Jacob Davis**, Benjamin A Bedard, Cyril L Williams, Avinash Dongare, Mark Aindow, Seok-Woo Lee (2020). Shock-Induced Deformation Twinning and Softening in Magnesium Single Crystals. *Journal of Materials and Design*. https://doi.org/10.1016/j.matdes.2020.108884

Proceedings and Other Publications

9. **Jacob Davis** (2025). Measuring waves in difficult places: New approaches to observing waves in hurricanes and sea ice. *Ph.D. Dissertation*, University of Washington. https://hdl.handle.net/1773/53952

8. **Jacob Davis**, Jim Thomson, Brian Butterworth, Isabel A. Houghton, Chris W. Fairall, Elizabeth J. Thompson, Gijs de Boer (2024). Multiscale measurements of hurricane waves using buoys and airborne radar. *Proceedings of 2024 IEEE/OES Thirteenth Current, Waves and Turbulence Measurement (CWTM) workshop*, Wanchese, NC, USA. https://doi.org/10.1109/cwtm61020.2024.10526332

7. Ciara Dorsay, Isabel Houghton, **Jacob Davis**, Jim Thomson, Pieter Smit, Eric Stackpole (2023). Aerial deployment of Spotter wave buoys during Hurricane Ian. *Proceedings of OCEANS 2023 Gulf Coast Technical Program*, Biloxi, MS. https://doi.org/10.23919/OCEANS52994.2023.10337056

6. Nhu Nguyen, **Jacob Davis**, Krish Thiagarajan, Nathan Tom, Salman Husain (2023). Investigation of Theoretical Solutions to a Bottom-Raised Oscillating Surge Wave Energy Converter (OSWEC) Through Experimental and Parametric Studies. *Proceedings of the ASME 2023 42nd International Conference on Ocean, Offshore and Arctic Engineering. Volume 8: Ocean Renewable Energy*, Melbourne, Australia. https://doi.org/10.1115/OMAE2023-106657

5. Salman Husain, **Jacob Davis**, Nathan Tom, Krish Thiagarajan, Cole Burge, Nhu Nguyen (2022). Influence on structural loading of a wave energy converter by controlling variable-geometry components and the power take-off. *Proceedings of the ASME 41st International Conference on Ocean, Offshore and Arctic Engineering (OMAE)*, Hamburg, Germany. https://doi.org/10.1115/OMAE2022-81518

4. **Jacob Davis** (2021). Design and testing of a foundation raised oscillating surge wave energy converter. *Master's Thesis*, University of Massachusetts Amherst. https://scholarworks.umass.edu/masters_theses_2/1144/

3. Nhu Nguyen, **Jacob Davis**, Krish Thiagarajan, Nathan Tom, Cole Burge (2021). Optimizing power generation of a bottom-raised oscillating surge wave energy converter using a theoretical model. *Proceedings of the 14th European Wave and Tidal Energy Conference*, Plymouth, UK. https://www.nrel.gov/docs/fy22osti/79929.pdf

2. Cole Burge, Nathan Tom, Krish Thiagarajan, **Jacob Davis**, Nhu Nguyen (2021). Performance modeling of a variable-geometry oscillating surge wave energy converter on a raised foundation. *Proceedings of the ASME 2021 40th International Conference on Ocean, Offshore and Arctic Engineering*, Virtual. https://www.nrel.gov/docs/fy21osti/78852.pdf

1. Nhu Nguyen, **Jacob Davis**, Ahmed Alshuwaykh, Krish Thiagarajan (2020). Design, Analysis, and Development of a Wave-Current Laboratory. *Proceedings of the ASME 2020 39th International Conference on Ocean, Offshore and Arctic Engineering, Volume 6A: Ocean Engineering*, Online. https://doi.org/10.1115/OMAE2020-19253

Seminars and Invited Talks

8. Seminar: "Surface Wave and Upper Ocean Interactions in Hurricane Erin (2025)" presented at *U.S. Naval Research Laboratory* (June 2026) Online

7. Seminar: "Wave slopes and wind-wave alignment in hurricanes" presented at *Woods Hole Oceanographic Institution Physical Oceanography seminar* (February 2026) Woods Hole, MA

6. Workshop presentation: "FAIR data practices" presented at *Programming in Earth Science Classrooms Educational workshop* (January 2026) Cambridge, MA

5. Invited panelist: "Hurricanes and Their Impacts: Insights Gained and Lessons Learned Nearly Two Decades After Hurricane Katrina" presented at *UW Atmospheric and Climate Science department colloquium* (December 2024) Seattle, WA

4. Seminar: "Air-deployed wave buoys for hurricane forecast improvements" presented at *UW Civil and Environmental Engineering department Environment and Water Program seminar* (October 2024) Seattle, WA

3. Seminar (with Jim Thomson and Isabel Houghton): "Buoy observations of wave spectra in hurricanes" presented at *NOAA Coastal Ocean Modeling Seminar Series* (2024) Online [link]

2. Seminar: "Wave measurements in hurricanes" presented at *Seattle University Math Department colloquium* (2023) Seattle, WA

1. Seminar: "Observations of ocean surface waves in hurricanes" presented at *UW Applied Physics Lab seminar* (2023) Seattle, WA [link]

Conference Presentations

18. **Jacob Davis**, Steven Jayne, Elizabeth Sanabia, David Richter, Alexander Ekholm, Lawrence Chen, Martha Schönau (2026). Surface Wave and Upper Ocean Observations in Hurricane Erin (2025). Presented at *Waves in Sea Environments (WISE) meeting*, Venice, Italy

17. **Jacob Davis**, Steven Jayne, Elizabeth Sanabia, Alexander Ekholm, Lawrence Chen, Martha Schönau (2026). Surface Wave and Upper Ocean Observations in Hurricane Erin (2025). Presented at *37th Conference on Hurricanes and Tropical Meteorology*, San Diego, California

16. **Jacob Davis**, Madison Smith, Jim Thomson, A. Christian Stanciu, Robert E. Abbott, Michael G. Baker (2026). Data-driven methods for ocean surface wave measurement using submarine fiber-optic cables. Presented at *Ocean Sciences Meeting*, Glasgow, Scotland

15. **Jacob Davis**, Jim Thomson, Madison Smith, Robert E. Abbott, Michael G. Baker, A. Christian Stanciu (2025). Data-driven methods for wave measurements using submarine fiber-optic cables. Presented at *Waves in Sea Environments (WISE) meeting*, Seattle, WA

14. **Jacob Davis**, Jim Thomson, Madison M. Smith (2025). Data-Driven methods for Ocean Surface Wave Measurements in the Coastal Arctic Using Submarine Fiber Optic Cables. Presented at *AMS 2025, Applications of Artificial Intelligence to the Coastal Environment*, New Orleans, LA [link]

13. Jim Thomson, Phil Bush, **Jacob Davis** (presenter), Alex de Klerk, S. Dickinson, F. Drum, E. Rainville, B. Salmi, M. Steele, J. Talbert (2024). Development, testing, and application of microSWIFT expendable buoys. Presented at *15th MTS Buoy Workshop*, Sequim, WA

12. **Jacob Davis**, Jim Thomson, Isabel Houghton, Chris Fairall, Elizabeth Thompson, Gijs de Boer (2024). Spatial distribution of wave slopes within hurricanes. Presented at *Waves in Sea Environments (WISE) meeting*, Corsica, France

11. **Jacob Davis**, Jim Thomson, Brian Butterworth, Isabel Houghton, Chris W. Fairall, Elizabeth J. Thompson, Gijs de Boer (2024). Multiscale Measurements of Hurricane Waves Using Buoys and Airborne Radar. Presented at *IEEE/OES Thirteenth Currents, Waves, Turbulence Measurement (CWTM) workshop*, Wanchese, NC

10. Madison M. Smith, Jim Thomson, Hannah Glover, ... including **Jacob Davis** (2024). Distributed Acoustic Sensing (DAS) of Seafloor Fiber Optics Enables Meter- scale Resolution of Surface Waves in the Coastal Ocean. Presented at *IEEE/OES Thirteenth Currents, Waves, Turbulence Measurement (CWTM) workshop*, Wanchese, NC

9. **Jacob Davis**, Jim Thomson, Isabel Houghton, Chris W. Fairall, Elizabeth J. Thompson, William Komaromi, James D. Doyle, and Jon Moskaitis (2024). Wave Slopes and Surface Roughness During Hurricanes. Presented at *Ocean Sciences Meeting*, New Orleans, LA

8. John C. Warner, Maitane Olabarrieta, Christopher R. Sherwood, ... including **Jacob Davis** (2024). Using Directional Wave Spectra to improve extreme storm forecasts: Hurricane Idalia 2023. Presented at *Ocean Sciences Meeting*, New Orleans, LA

7. **Jacob Davis**, Jim Thomson, Isabel Houghton, Chris Fairall, Elizabeth Thompson, Gijs de Boer, William Komaromi, James Doyle (2023). Saturation of wave slopes observed during hurricanes. Presented at *Waves in Sea Environments (WISE) meeting*, Princeton, New Jersey

6. Jim Thomson, Madison Smith, **Jacob Davis**, Michael Baker, Robert Abbott (2023). Waves and sea ice measured with telecom cables at the Arctic coast. Presented at *Waves in Sea Environments (WISE) meeting*, Princeton, New Jersey

5. Michael Baker, Robert Abbott, Christian Stanciu, Jennifer Frederick, Madison Smith, Jim Thomson, **Jacob Davis**, Andres Peña-Castro, Brandon Schmandt (2023). Monitoring Arctic coastal processes with seafloor distributed acoustic and temperature sensing. Poster presented at *Alaska Marine Science Symposium (AMSS)*, Anchorage, Alaska

4. **Jacob Davis**, Jim Thomson, Isabel Houghton, Chris Fairall, Elizabeth Thompson, Gijs de Boer (2022). Wave slopes observed during hurricanes using arrays of drifting buoys. Poster presented at *Waves in sea environments (WISE)*, Brest, France

3. **Jacob Davis**, Isabel Houghton, Jim Thomson, Pieter Smit, Gijs de Boer, Elizabeth Thompson, Tim Janssen, Chris Fairall (2022). Distributed sampling of hurricane waves. Presented at *Ocean Sciences Meeting (OSM)*, Online

2. **Jacob Davis**, Michael Choiniere, Nhu Nguyen, Nathan Tom, Krish Thiagarajan (2020). Reducing the structural costs of a wave energy converter through variable geometry design and control. Poster presented at *Intl. Mechanical Engineering Congress and Exposition (IMECE)*, Online [link]

1. Nhu Nguyen, **Jacob Davis**, Ahmed Alshuwaykh, Krish Thiagarajan (2020). Design, Analysis, and Development of a Wave-Current Laboratory. Presented at *ASME 39th International Conference on Ocean, Offshore and Arctic Engineering (OMAE)*, Online [link]

Awards and Honors

Best Student Oral Presentation (2nd place), AMS 2025 Symp. on the Coastal Env.	Winter 2025
Best Student Paper, Ocean Engineering Society CWTM 2024	Winter 2024
Best Outreach Effort, IMECE 2020 NSF poster presentation award	Fall 2020
Wind Energy Fellow, University of Massachusetts Wind Energy Center	Fall 2019
summa cum laude, B.S. in Mechanical Engineering	Spring 2019
Best Student Concept Award, MIE Senior Capstone Design Competition	Spring 2019
University of Massachusetts College of Engineering Dean's Fellowship	Spring 2019
Sandra M. and John M. Ferriter College of Engineering Scholarship	Fall 2018
University of Massachusetts Amherst Dean's List, Fall and Spring semesters	2015 – 2019

Selected Workshops

Programming in Earth Science Classrooms Educational workshop, Cambridge, MA — Jan 2026

3-day in-person workshop at MIT on the effective sharing and teaching of coding and data practices.

Cyber2A, Santa Barbara, CA — Oct 2024

5-day in-person training workshop on applying Artificial Intelligence in Arctic research hosted at the National Center for Ecological Analysis and Synthesis (NCEAS). [link]

Google Earth Engine training, Seattle, WA — Oct 2023

2-day in-person training workshop on using Google Earth Engine for remote sensing and machine learning applications, hosted at Google's Seattle offices.

Software Projects and Data

Code for: Neural network-based methods for ocean wave measurement using DAS 2025

Source and example code to accompany the article J. Davis et al. "Neural network-based methods for ocean surface wave measurement using submarine distributed acoustic sensing (DAS)" published in *JGR: Machine Learning and Computation*. [GitHub]

Data for: Neural network-based methods for ocean wave measurement using DAS 2025

Distributed acoustic sensing and mooring data to accompany the article J. Davis et al. "Neural network-based methods for ocean surface wave measurement using submarine distributed acoustic sensing (DAS)" published in *JGR: Machine Learning and Computation*. [Dryad link]

NOPP Hurricane Coastal Impacts MicroSWIFT datasets 2025

Ocean surface wave measurements collected by free-drifting microSWIFT buoys in Hurricanes Ian (2022), Idalia (2023), Lee (2023), Francine (2024), Helene (2024), and Milton (2024) as part of the NOPP Hurricane Coastal Impacts project. [Ian] [Idalia] [Lee] [Francine] [Helene] [Milton]

Code for: Wave slopes and wind-wave alignment in Hurricane Idalia 2024

Jupyter notebooks and source code to accompany the article J. Davis et al. (2025) "Ocean surface wave slopes and wind-wave alignment observed in Hurricane Idalia" published in *JGR: Oceans*. [GitHub]

Data for: Wave slopes and wind-wave alignment in Hurricane Idalia 2024

Wave buoy observations from targeted air-deployments into Hurricane Idalia (2023) and colocated model 10-m winds to accompany the article J. Davis et al. (2025) "Ocean surface wave slopes and wind-wave alignment observed in Hurricane Idalia." published in *JGR: Oceans*. [Dryad link]

Data for: Saturation of ocean surface wave slopes observed during hurricanes 2023

Observational wave data and modeled wind data to accompany the article J. Davis et al. (2023) "Saturation of ocean surface wave slopes observed during hurricanes" in *GRL*. [Dryad link]

microSWIFTtelemetry 2022 – present

Python package for pulling telemetry from the microSWIFT wave buoy developed at the University of Washington Applied Physics Laboratory. [https://github.com/SASlabgroup/microSWIFTtelemetry]

microSWIFT v1 2020 – 2021

Operational code for the microSWIFT v1 wave buoy developed at the University of Washington Applied Physics Laboratory. [https://github.com/SASlabgroup/microSWIFT]

Field and Laboratory Work

Ocean array deployment in Hurricane Lowell Sep 2026

Air-deployment of 60+ surface and upper ocean instruments ahead of Category 5 Hurricane Lowell (2026) from a WC-130 with the 53rd Weather Reconnaissance Squadron "Hurricane Hunters." Deployment of AXBTs inside the storm during three subsequent center fix missions.

DAS deployment at the South Florida Ocean Measurement Facility Aug 2026

Deployment of a distributed acoustic sensing interrogator offshore of Fort Lauderdale, FL.

DAS deployment on the St. Lawrence River Estuary Feb 2026

On-ice deployment of a distributed acoustic sensing cable and interrogator in Rimouski, Canada.

Ocean array deployment in Hurricane Helene (field lead) Sep 2024

Air deployment of 30 wave and water-level measuring instruments from an NRL Scientific Development Squadron P-3 ahead of Category 4 Hurricane Helene's landfall in Florida. [press release]

Submersible Spotter test deployment Jan 2024

Air deployment of wave and water-level measuring instruments from a P-3 offshore of Pax River, MD.

Wave energy converter deployment in Lake Washington Jan 2024

Small boat operations for a moored WEC deployment. [news article]

Wave buoy deployment in Prudhoe Bay, AK Oct 2022

Air deployment of 10 microSWIFT wave buoys from a helicopter offshore of Prudhoe Bay, AK, to calibrate a distributed acoustic sensing system during autumn ice freeze-up.

Buoy array deployment in Hurricane Ian (field lead) Sep 2022

Air deployment of 20 wave buoys from a P-3 with the Navy's Scientific Development Squadron (VXS-1) ahead of Category 4 Hurricane Ian's landfall in southwestern Florida. [news article]

Wave buoy test deployment (field lead) Aug 2022

Air deployment of 7 wave buoys from a P-3 offshore of Pax River, MD.

Wave test deployment in the Gulf of Mexico (field lead) Jul 2022

Air deployment of 7 wave buoys from a PHI Aviation helicopter offshore of Houma, Louisiana.

Wave buoy deployment in Prudhoe Bay, AK Jun 2022

Air deployment of 7 microSWIFT wave buoys from a NOAA Twin Otter and a helicopter offshore of Prudhoe Bay, AK, to calibrate a distributed acoustic sensing system during spring ice break-out.

Wave buoy test deployment over Hood Canal, WA May 2022

Air deployment of 8 wave buoys from an open-door Cesna Caravan.

During Nearshore Event eXperiment (DUNEX) Oct 2021

1-week of participation in a nearshore wave breaking experiment with microSWIFT buoys in Duck, NC.

7-day cruise aboard R/V Thompson Sep 2021

Sediment coring in Astoria Canyon (Chief Scientist: Andrea Ogston).

Variable-geometry wave energy converter experiments (lead), UMass Amherst 2021

Scale model design, fabrication, hydrodynamic modeling, and wave tank testing of a wave energy converter which employs variable geometry modules for hydrodynamic control.

Oscillating surge wave energy converter experiments (lead), UMass Amherst 2021

Scale model design, fabrication, hydrodynamic modeling, and wave tank experiments on a foundation-raised oscillating surge wave energy converter (Master's thesis).

Wave-current laboratory development, UMass Amherst 2019 - 2021

Lead role in the planning and development of a wave-current facility, including the mechanical and structural design of an 11-meter long, 5000-gallon recirculating wave-current flume, instrumentation selection, lab assembly, and data acquisition hardware setup.

Teaching and Mentoring

Undergraduate Mentor Woods Hole Oceanographic Institution Summer 2026

Advisor to a undergraduate summer student visiting from Colorado School of Mines.

Guest lecturer Woods Hole Oceanographic Institution 2026

Guest lecture on "Observations of Air–Sea Interactions in Hurricanes" for visiting Harvard University students in an Introduction to Physical Oceanography course taught by Prof. Eli Tziperman.

Graduate Mentor University of Washington 2025

Co-advisor to a UW Physics Master's student completing a capstone project on hurricane waves.

Guest lecturer University of Washington Winter 2024

Guest lecture on dimensional analysis and the Buckingham Pi theorem for an undergraduate Civil Engineering Fluid Mechanics course taught by Prof. Jim Thomson.

Guest lecturer University of Washington Fall 2024

Guest lecture on "Marine boundary layer measurements" for graduate-level Atmospheric Science Department Boundary Layer Meteorology course taught by Prof. Greg Hakim.

Undergraduate Mentor University of Washington Summer 2024

Co-advisor to an undergraduate intern through the Applied Physics Lab's Diverse + Inclusive Naval Oceanographic Summer Internship Program (DINOSIP). [website]

Teaching Assistant University of Washington Spring 2024

Graded assignments and prepared starter code for graduate-level Field Measurements for Hydrodynamics and Hydrology course. [GitHub link]

Guest lecturer Western Washington University Fall 2023

Guest lecture on "Wave measurements in hurricanes" for Waves and Tides taught by Prof. Sam Kastner.

Teaching Assistant University of Washington Winter 2023

Workshop and lab lead for undergraduate Civil and Environmental Engineering Introduction to Fluid Mechanics course.

Undergraduate Mentor UMass Amherst Summer 2024

Co-advisor and mentor to two undergraduate interns during development of the UMass Amherst Ocean Resources and Renewable Energy wave-current lab and testing of a scale wave energy converter model.

College of Engineering Teaching Fellow UMass Amherst Fall 2020

Designed and instructed a 36-student freshman seminar focused on a discussion of engineers and the roles they play in climate change mitigation, forecasting, and resilience.

Python Workshop Teaching Assistant UMass Amherst Fall 2019

Provided teaching assistance to attendees of a multi-session, introductory Python workshop for mechanical and industrial engineering undergraduate and graduate students.

Residence Hall Academic Peer Mentor UMass Amherst 2017 – 2019

Live-in academic mentor to 50 diverse first year undergraduate students. Supported students in academics and mental health.

Service

Organizer WHOI Machine Learning Seminar 2026 – present

Organize monthly seminar series on machine learning applications in oceanography at WHOI.

Co-organizer WHOI Physical Oceanography Seminar 2026 – present

Co-organize WHOI Physical Oceanography department's weekly seminar.

Reviewer 2023 – present

Applied Ocean Research, Geophysical Research Letters, Journal of Geophysical Research: Machine Learning and Computation, Journal of Geophysical Research: Oceans, Journal of Physical Oceanography, Journal of Atmospheric and Oceanic Technology, Journal of Ocean Engineering and Marine Energy, Monthly Weather Review

Co-facilitator Science Ethics workshop Summer 2026

Co-facilitated a 1-day workshop on science ethics for WHOI summer interns.

Exhibitor Polar Science Day Spring 2025

Co-exhibitor at the UW Environmental Fluid Mechanics group's Polar Science Day booth at the Seattle Pacific Science Center.

Around the Americas microSWIFT demo University of Washington 2025

Demonstrated microSWIFT buoys for Around the Americas Expedition live stream. [video]

DINOSIP educational research cruise University of Washington 2023, 2024

Demonstrated microSWIFT buoys during an educational research cruise aboard the R/V Rachel Carson for students in the Diverse + Inclusive Naval Oceanographic Summer internship program. [video]

Panelist University of Washington Winter 2024

Current graduate student panel for CEE prospective student visit day.

Lead Organizer Engineering Discovery Days Spring 2024

Organized the UW Environmental Fluid Mechanics group's participation in Engineering Discovery Days, a two-day event in which our group taught hundreds of 4th through 8th grade students how two bodies of water with different densities interact through a "lock exchange" experiment. [event post]

Nirnimesh Kumar coastal engineering textbook University of Washington 2023 – present

Helping with figure reproduction and editing for the posthumous publication of Dr. Nirnimesh Kumar's course lecture notes as a coastal engineering textbook.

PCC Graduate Steering Committee (P-GraSC) University of Washington 2022 – 2024

Member of the UW's Program on Climate Change (PCC) Graduate Steering Committee and Undergraduate Cohort subcommittee. [example event post]

MIE Graduate Student Leadership Council UMass Amherst 2019 – 2021

Co-organized workshops and seminars within the Mechanical and Industrial Engineering Department tailored towards promoting graduate student professional growth.

Other Professional Experience

Nanotechnology NSF Research Experience for Undergraduates, UConn Storrs 2018

Projects: 1) mechanical properties and deformation behavior of shock-compressed magnesium single crystals; and 2) study of the Hall-Petch relationship in nanocrystalline $MgAl_2O_4$.

Systems Engineering Intern, Otis Elevator Company, Farmington, CT 2017

Design and structural analysis of a lightweight double-deck elevator car frame.

Certifications & Trainings

Motorboat Operator Training Course (MOTC), Scientific Boating Safety Association (exp. 2029)
Naval Aviation Survival Training Program (NASTP), non-aircrew; NAS Whidbey Island (exp. 2026)
Helicopter Underwater Egress Training (HUET), Seafarers Worldwide (Anacortes, WA)

Activities & Interests

Performing musician (guitar, double bass)
Automotive repair
Art (graphite, charcoal)
Skiing and snowboarding